

**PARASITE COMPLEX OF *ARCHIPS*
ARGYROSPILUS, *CHORISTONEURA ROSACEANA*
(LEPIDOPTERA: TORTRICIDAE) AND
ANACAMPSIS INNOCUELLA (LEPIDOPTERA:
GELECHIIDAE) IN WYOMING SHELTERBELTS¹**

Michael G. Pogue²

ABSTRACT: Immature stages of *Archips argyrospilus* (Walker), *Choristoneura rosaceana* (Harris), and *Anacampsis innocuella* (Zeller) were collected from foliage of shelterbelt plantings and held for parasite emergence. Eleven hymenopterous parasite species were reared from each of the three pest species, with *Itopectis conquisitor* (Say) being parasitic on all three species. Parasitization rates for larvae ranged from 36-41% (a single parasitized larva of *A. innocuella* was collected) and 41-52% of the pupae were parasitized. New parasite hosts and state distribution records are presented.

Shelterbelts are artificial plantings of trees and shrubs around farm and ranch houses. In eastern Wyoming, shelterbelts give protection from high winds and increase snow accumulation which prevents drifting against buildings. Surveys for shelterbelt pests near Wheatland, Platte Co., Wyoming during 1979 yielded three Lepidoptera species. All were leaf rollers, *Archips argyrospilus* (Walker) and *Choristoneura rosaceana* (Harris) (Tortricidae), and *Anacampsis innocuella* (Zeller) (Gelechiidae). Larvae of all three are foliage feeders within rolled terminal leaves of their hosts. *A. argyrospilus* was polyphagous, being collected on 12 species of deciduous trees and shrubs in the shelterbelts surveyed (Pogue and Lavigne 1981). *C. rosaceana* larvae were collected principally on American elm (*Ulmus americana* L.) and *A. innocuella* larvae on the plains cottonwood (*Populus sargentii* Dode).

METHODS AND MATERIALS

Immature stages of *A. argyrospilus*, *C. rosaceana*, and *A. innocuella* were hand collected from foliage of host plants in several shelterbelts during June and July, 1979. Larvae and pupae were placed in individual 4 dram shell vials and held until either adult moths or parasites emerged. Larvae were fed foliage of the host on which they were collected.

Parasites were identified by R.W. Carlson (Ichneumonidae), S.R.

¹Received August 25, 1984. Accepted October 15, 1984.

²Department of Entomology, Smithsonian Institute, U.S. National Museum of Natural History, NHB 127, Washington, DC 20560.

Shaw (Braconidae), P.M. Marsh (Braconidae), A.S. Menke (Bethyridae), and E.E. Grissell (Eulophidae, Pteromalidae, Chalcididae), Insect Identification and Beneficial Insect Introduction Institute, U.S.D.A., Beltsville, MD. Moth determinations were made by the author. Krombein et al. (1979) was used to determine new host and distribution records for parasites that were collected during this study.

RESULTS AND DISCUSSION

Eleven species of hymenopterous parasites were reared from three pest species (Table 1). Only *Itopectis conquisitor* (Say) was parasitic on all pests. All Icheumonidae species were pupal parasites, whereas all Braconidae species were larval parasites. The other larval parasite was *Goniozus floridanus* (Ashmead) (Bethyridae) and additional pupal parasites were *Pediobius* sp. (Eulophidae), *Pteromalus* sp. (Pteromalidae), and *Spilochalcis leptis* Burks (Chalcididae).

No known hosts have been recorded previously for *Goniozus floridanus* which was parasitizing *A. argyrosipilus*. Other new host records include *C. rosaceana* for *I. conquisitor* and *Meteorus trachynotus* Viereck; and *A. innocuella* for *S. leptis*. New distribution records for Wyoming included *Phaeogenes cacoeciae* Viereck and *S. leptis* (Krombein et al. 1979).

Most common parasites of *A. argyrosipilus* included *I. conquisitor* attacking pupae and *Macrocentris cerasivoranae* Viereck attacking larvae. Larvae of *C. rosaceana* were most commonly attacked by *M. trachynotus*. Pupae of *A. innocuella* were parasitized by *I. conquisitor* and *Phaeogenes* sp.

The immature stages of the leafrollers were moderately parasitized. Density was estimated to be about one per square meter of surface foliage. Of 42 larvae and 56 pupae of *A. argyrosipilus*, each were parasitized 41%. In *C. rosaceana*, 36% of 11 larvae and 44% of 16 pupae were parasitized. A single parasitized larva of *A. innocuella* was collected, and of 23 pupae, 52% were parasitized.

An obligate secondary parasite, *Catolaccus aeneoviridis* (Girault), was reared from pupae of *A. argyrosipilus* and *C. rosaceana*. Atkins et al. (1957) reared *C. aeneoviridis* from a parasite, *Goniozus platynotae* Ashmead, that was commonly attacking larvae of *Platynota stultana* Walsingham, a tortricid feeding on cotton. *C. aeneoviridis* was reared from pupae of *Evora hemidesma* (Zeller), a tortricid feeding on *Spirea* spp., and was considered a hyperparasite (Roberts 1966). Krombein et al. (1979) records *G. platynotae*, *Macrocentrus* sp. and *Meteorus* sp. as hosts of *C. aeneoviridis*. In the larval samples collected during this study, *C. aeneoviridis* could have been parasitizing any of the Braconidae or *G. floridanus* based

on the cited literature.

No Diptera were reared during this study. Several species of Tachinidae parasites have been reared from these lepidopterous pests (Raizenne 1952; Schaffner 1959). Density of tachinid parasites may have been too low to be included in such a small sample size of the pest species. A major factor contributing to the success of a parasite in locating a suitable host is habitat preference. Many hosts are parasitized because they are found in a certain habitat and are acceptable to the parasite, not due to being a preferred host of the parasite (Vinson 1976). Shelterbelts, being artificial plantings, may not be an attractive habitat in which certain parasites might search for hosts.

The parasite complex of these lepidopterous pests may play a major role in suppressing their numbers.

Table 1. Parasites reared from *A. argyrospilus*, *C. rosaceana*, and *A. innocuella* larvae and pupae from shelterbelt plantings in southeastern Wyoming.

Parasite	<i>A. argyrospilus</i>		<i>C. rosaceana</i>		<i>A. innocuella</i>	
	Larva	Pupa	Larva	Pupa	Larva	Pupa
Hymenoptera						
Ichneumonidae						
<i>Itopectis conquistator</i> (Say)		X		X ^b		X
<i>Itopectis quadricingulata</i> (Provancher)		X				
<i>Phaogenes cacociae</i> Viereck ^a		X				
<i>Phaogenes</i> sp.						X
Braconidae						
<i>Macrocentrus cerasivoranae</i> Viereck	X				X	
<i>Macrocentrus iridescens</i> French			X			
<i>Meteorus trachynotus</i> Viereck	X		X ^b			
Eulophidae						
<i>Pediobius</i> sp.						X
Pteromalidae						
<i>Pteromalus</i> sp.				X		
Chalcididae						
<i>Spilochalcis leptis</i> Burks ^a		X				X ^b
Bethylidae						
<i>Goniozus floridanus</i> (Ashmead)		X ^b				

^aNew Wyoming record

^bNew parasite host record

ACKNOWLEDGMENTS

I would like to thank William E. Miller of the Department of Entomology, University of Minnesota and Robert J. Lavigne of the Entomology Department, University of Wyoming for critically reviewing this manuscript. Appreciation is also extended to R.W. Carlson, S.R. Shaw, P.M. Marsh, A.S. Menke, and E.E. Grissell for parasite determinations.

LITERATURE CITED

- Atkins, E.L., Jr., M.L. Frost, Jr., L.D. Anderson, and A.S. Deal. 1957. The "Omnivorous Leaf Roller," *Platynota stultana* Wislm., on cotton in California: Nomenclature, life history, and bionomics (Lepidoptera, Tortricidae). *Ann. Ent. Soc. Amer.* 50: 251-259.
- Krombein, Karl V., Paul E. Hurd, Jr., David R. Smith, and B.D. Burks. 1979. *Catalog of Hymenoptera in America north of Mexico*. Smithsonian Institution Press, Washington, D.C., 2735 pp.
- Pogue, Michael and Robert Lavigne. 1981. The Tortricinae (Lepidoptera: Tortricidae) of Wyoming. *Univ. of Wyoming. Agr. Exp. Sta. Science Monograph* 41, 321 pp.
- Raizenne, Henri. 1952. Forest Lepidoptera of southern Ontario and their parasites received and reared at the Ottawa Forest Insect Survey Laboratory from 1937 to 1948. *Canada Dept. Agr. Sci. Ser. Div. Forest Biology, Ottawa, Canada*, 277 pp.
- Roberts, Donald W. 1966. Life history and parasites of *Evora hemidesma* (Zeller) (Lepidoptera: Olethreutidae). *Contrib. Boyce Thompson Inst.* 23: 165-170.
- Schaffner, J.V., Jr. 1959. Microlepidoptera and their parasites reared from field collections in the northeastern United States. U.S.D.A. Forest Service, Misc. Pub. No. 767, 97 pp.
- Vinson, S. Bradleigh. 1976. Host selection by insect parasitoids. *Annu. Rev. Entomol.* 21: 109-133.

**INTERNATIONAL COMMISSION ON
ZOOLOGICAL NOMENCLATURE**

c/o BRITISH MUSEUM (NATURAL HISTORY),
CROMWELL ROAD, LONDON, SW7 5BD.

ITZN 11/5 A.N.(S.) 132

3 December 1984

The Commission hereby gives six months notice of the possible use of its plenary powers in the following cases, published in the *Bulletin of Zoological Nomenclature*, volume 41, part 4, on 30 November, 1984 and will welcome comments and advice on them from interested zoologists.

Correspondence should be addressed to the Secretary at the above address, if possible within six months of the date of publication of this notice.

Case No.

- | | |
|------|--|
| 2115 | Report on <i>Glyphipterix</i> Hubner, [1825] (Insecta, Lepidoptera). |
| 2318 | <i>Aphodius rufus</i> Moll, 1782 and <i>Aegialia rufa</i> Fabricius, 1792 (Insecta, Coleoptera): proposed conservation under the plenary powers by suppression of <i>Aphodius scybalarius</i> Fabricius, 1792. |

(Continued to page 92)